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Measuring the Perception of Malaysian SME Towards E-Commerce as an Innovation

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ABSTRACT

This paper presents a quantitative study in measuring the perception of Malaysian SME towards ecommerce as an innovation and factors affecting the adoption of it. It is concerned with initiatives that are intended to help SME in Malaysia to adopt E-commerce as an innovation. The research has two main emphases: First, it presents some preliminary findings on the perception of Malaysian SME towards E-commerce as an innovation; and the level of confidence towards E-commerce as an innovation. Second, it streamlines various initiatives by Ministry of International Trade and Industry (MITI), Small and Medium Industries Development Corporation (SMIDEC), Bank Negara Malaysia and local governments in accelerating the acceptance of E-commerce by Malaysian SME. The study engaged 38 SME participants through a survey using a self-administered questionnaire. 32% of the surveyed SME are from the Type 1 Industry; comprising manufacturing, manufacturing related services, and agro-based services and about 68% are from Type 2 Industry comprising services, primary agriculture, and ICT. The self-administered questionnaire consists of two sections. Section I contains demographic information and SME specification while Section II contains 37 items: 31 items utilised Likert Scales items ranging from 1(strongly disagree) to 5(strongly agree), and six items utilised defined interval scales. Rogers' attributes of innovations (2003): relative advantage, compatibility, complexity,

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trial ability and observability were used in the construct of the research instrument. This research emphasizes on Rogers' framework, as it was found useful where the study sought to understand the diffusion and use of E-commerce by Malaysian SME in the investigation. Descriptive statistics were used to analyse and present empirical data of the 38 SME. The results from the quantitative data provided information on addressing barriers to SME, and confirmed the characteristics of Rogers' adoption categories. The study shows that the instrument which was designed with seven constructs lacked internal consistency in two determinants: relative advantage and observability. Findings interpreted through Rogers' theory suggest that an action plan should include initiatives to help SME towards E-commerce as an innovation.

Keywords: *Electronic commerce adoption, Rogers' Diffusion of Innovations Theory, SME, Malaysian SME, SME initiatives*

Introduction

Prior studies have shown that the adoption behaviour of innovative information systems by SME is heavily dependent on organisational and environmental characteristics (Dasgupta et al., 1999). Government influence was found to play an important role in the promotion or enforcement of innovative IS adoption by SME and it is vital for ensuring adoption of nationwide innovative IS (Panayiotou et al., 2004; Chau & Jim, 2002; Iacovou et al., 1995). The key issue facing many SME relates to how they can foster effective innovation using organisational supporting mechanism (McEvily et al., 2004). In this research, the factors affecting E-commerce adoption and the extent of E-commerce adoption in SME are explored.

SME is challenged by the globalisation of production and the shift in the importance of the various determinants of competitiveness. Through the rapid spread of ICT, markets in different parts of the world have become more integrated (Migiro, 2006). Hence, to achieve expected competitiveness, adoption of E-commerce and drivers is invaluable. E-commerce is sharing of business information, maintaining business relationships and conducting business transactions by means of Internet based technology (Zwass, 1996).

The objectives of this study are to present some preliminary findings on the perception of Malaysian SME towards E-commerce as an innovation; and the level of confidence towards E-commerce as an innovation and to streamline various initiatives by MITI, local governments, and SMIDEC in accelerating the acceptance of E-commerce by Malaysian SME.

Participation in E-commerce is important from the perspective of commercial transactions but more so in the way it encourages transformation of internal systems and the subsequent influences in terms of cost, responsiveness to customers, customization of offerings and the potential emergence of new

products and services (Crawford, 1998). However, most SME adopts E-commerce in a just by chance manner, rather a consequence of systematic consideration and planning (Engsbo et al., 2001; Scupola, 2002). From this viewpoint it is considered that the study of E-commerce as an innovation by SME in Malaysia is important as it will shed light on the current situation. Malaysian SME knows that the market will become more dynamic, competitive, and global (Saleh & Ndubisi, 2006). This preliminary study helps in understanding the internal barriers of SME towards E-commerce, the level of E-commerce currently practiced by SME, and the importance of E-commerce on their businesses now and in the future. Once these barriers are ascertained and the level of E-commerce that is engaged, a streamlining of initiatives by relevant parties such as MITI, state governments, and SMIDEC (established in 1996 to assist with SME development), is necessary to entice and engage SME to the benefits of E-commerce with minimal investment and costs. Streamlining of initiatives has to be conducted to reduce the cost of infusing E-commerce if it is to gain critical mass quickly within Malaysia.

Literature Review

E-commerce and Small Medium Enterprises (SME)

E-commerce can bring a lot of benefits to SME as it can help SME to compete with the big companies by providing the location and time independence, and ease of communication. Yet, E-commerce is not being adopted readily by SME (Whiteley, 2000; Beveren & Thomson, 2002; Fillis et al., 2004; Grandon & Pearson, 2004; Houghton & Winklhofer, 2004; Hashim, 2006). On 9 June 2005, Malaysia's National SME Development Council has approved the common definition of SME across the economic sector, for adoption by all government ministries and agencies involved in SME development, as well as financial institutions (Bank Negara, 2005). The definition is based on two criteria: the number of employees and the annual sales turnover. In addition, it is important to understand that SME are not smaller versions of larger firms (Shrader et al., 1989).

Theoretical Framework of the Study

The idea of innovation is about presenting SME with new ideas or means of solving problems. Rogers' framework was found useful as the study sought to understand the diffusion and use of ecommerce by SME in the investigation. Roger's model described in his book, Diffusion of Innovations has been identified as one of the most popular adoption models (Sherry & Gibson, 2002, cited in Sahin & Thompson, 2006). Much research from a broad variety of disciplines has used the model as a framework such as in political science,

public health, communications, history, economics, technology, and education (Sahin & Thompson, 2006). Rogers' theory is widely used theoretical framework in the area of technology diffusion and adoption.

In this study, SME respondents were evaluated to find out where they were in the innovation-decision process. Rogers' (2003) attributes of innovations were used in the construct of the research instrument. While the relative advantage, compatibility and complexity attributes measured respondents' perceptions toward E-commerce, the research instrument included the trialability and observability attributes as the social support variables. Results from the survey were interpreted using Rogers' categories as the frame for both describing the current level of perception of adoption of E-commerce as an innovation and suggesting interventions for moving E-commerce to higher levels of confidence.

Figure 1 shows the theoretical framework for the study using Rogers' (2003) Diffusion of Innovations Theory.

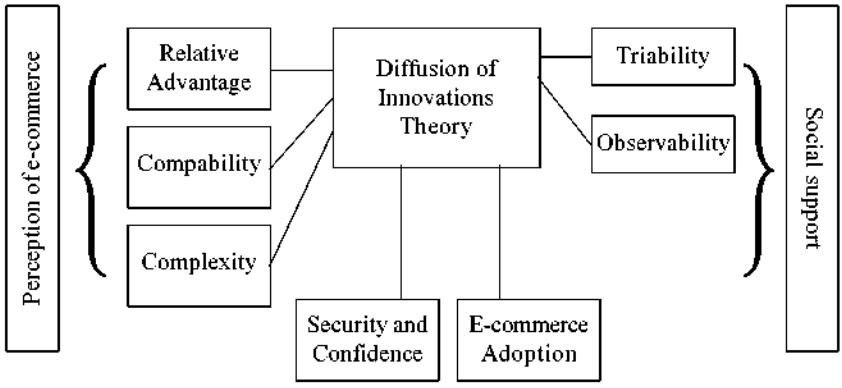

Figure 1: Theoretical Framework using Rogers' Diffusion of Innovations Theory, 2003

Methodology

Using Rogers' (2003) Diffusion of Innovations theory as the theoretical framework, this quantitative study aimed to access the adoption level of E-commerce for business. The study also aimed to gauge the perception of Malaysian SME towards E-commerce as an innovation. Specifically, Rogers' theory was used in the process of data collection and as a frame to interpret the findings from this study. The research instruments included items that measure perception level with respect to the specific elements of this theory.

Participants

The participants of this study consisted of 38 SME that were selected through convenience sampling. An employee of each SME is randomly selected to respond to a self-administered questionnaire. Hence, the perceptions and confidence expressed towards E-commerce as an innovation of the respective SME is limited to that representative employee.

Research Instrument

A self-administered questionnaire was designed with the following specification: Section I contains eight demographic items (respondent's age, gender, marital status, ethnic group, nationality, educational level, job function and job title). An additional item requires the respondent to specify which of the three categories of SME as identified by SMIDEC; i.e. type of industry, number of full time employees and the annual sales turnover, the respondent is currently working with. Section II of the questionnaire focuses on collecting information on E-commerce perception, confidence, and adoption. The survey instrument uses items with Likert Scales (1 = strongly disagree to 5 = strongly agree). For E-commerce Adoption determinant, the respondent was to select the current state of Internet activities adoption based on scale 1 = Current User, 2 = within 1 year, 3 = between 1-2 years, 4 = between 3-5 years, and 5 = after 5 years.

The self-administered questionnaire was checked for content validity. Content validity is the extent to which the questions on the research instrument and the scores from these questions are representative of all the possible questions that a researcher could ask about the content or skills (Creswell, 2005). This questionnaire was checked by three academics from the Faculty of Business and Law, Multimedia University (Malacca). This led to modifying some items, revising the wording of items and altering some of the options offered. The revised questionnaire was pilot tested with 18 Malaysian SME. Comments and suggestions were noted to further refine the questionnaire. Table 1 lists those seven constructs of ecommerce adoption within the research context which are mapped to the actual survey items.

Results and Discussions

Respondent Profile

Table 2 shows the respondent profile of the 38 SME. About 68% of the respondents are from the age range of 20 to 30 years old. 76% are male and 45% are married. 71% of the respondents are Malays, 24% are Chinese, and 5% are Indians. The respondents' educational level comprises 45% with degrees, 32% with diploma, 18% with certificate, and 5% with postgraduate degrees.

Table 1: Research Constructs and Items

Constructs	Item No	Items
Relative Advantage	#1	Reduce the company's overall operating costs
	#2	Help company to expand market share
	#3	Help company to increase customer base
	#4	Increase company sales and revenues
	#5	Reduce operating procedures
	#6	Create new channel for advertising
	#7	Create public relation to improve company's image
	#8	Increase company's competitive advantage
Compatibility	#9	Compatible with company's traditional operating procedures
	#10	Compatible with company's current operations/processes
	#11	Compatible with the existing values and mentality of the people in company
	#12	Compatible with suppliers' and customers' ways of doing business
	#13	Compatible with the culture of people in Malaysia
Complexity	#14	Company lacks adequate computer systems to support E- commerce activities
	#15	People in Company lack necessary knowledge and understanding of E-commerce and require a lot of training to start using E-commerce
	#16	E-commerce applications are too complicated to understand and use
	#17	Company lacks the technical knowledge to install the new hardware and software needed for ecommerce
Trialability	#18	Company could access to a free trial before making a decision to adopt E-commerce
	#19	Company has the opportunity to try a number of E-commerce applications before making a
	#20	Company can try out E-commerce on a sufficiently large scale
	#21	Company is allowed to use E-commerce on a trial basis long enough to see its true capabilities
	#22	It is easy the Company to get out after testing a E-commerce
	#23	The start-up cost for using E-commerce is low
Observability	#24	There are so many computers that people in the co. can access to use Internet and E-commerce
	#25	Many competitors & business partners in the market have started using E-commerce
	#26	Using E-commerce helps co. to connect with both domestic & international business partners at
	#27	Using E-commerce shows improved results over doing business the traditional way
Security and Confidentiality	#28	Company lacks confidence about the security of E-commerce transactions
	#29	Company is not confident about how to retrieve all information when the system is down
	#30	Company does not have confidence in the payment system of E-commerce

continued

Table 1 – *continued*

E-commerce	#31	E-commerce may permit competitors to gain access to Company's important information
	#32	Sending e-mail to communicate with business partners
	#33	Use www to access information
	#34	Developing website for presenting co., products & services information
	#35	Having transactions over the Internet
	#36	Linking online business transactions with co.'s operating systems like accounting and inventory
	#37	Creating business value chain activities with business partners over the Internet

Table 2: Respondent Profile

Age (years)	20 – 30 68.4%	31 – 40 18.5%	41 – 50 10.5%	>50 2.6%
Sex	Male 76%		Female 45%	
Marital Status	Single 55%		Married 45%	
Ethnicity	Malay 71%	Chinese 24%	Indian 5%	
Educational Level	Certificate 18.4%	Diploma 31.6%	Graduate 44.7%	Postgraduate 5.3%

About 32% of the surveyed SME are from the Type 1 Industry which comprises manufacturing, manufacturing related services, and agro-based services. About 68% are from Type 2 Industry which comprises services, primary agriculture, and ICT. Figure 2 shows the job function distribution among the respondents. About 37% of the respondents are from the IT/MIS department while 21% are from the sales/marketing department. About 8% involved in purchasing and accounting/finance respectively.

Reliability Analysis

Cronbach's Alpha is most commonly used as a reliability measure of a set of items or statements. It can be interpreted as a variable coefficient and so its value ranges from 0 and 1. The set of items is considered to be reliable or have internal consistency if Cronbach's Alpha value is .7 or higher. Table 3 shows the Cronbach's Alpha value for those seven constructs. Relative Advantage and Observability show no internal consistency. Compatibility and Trialability

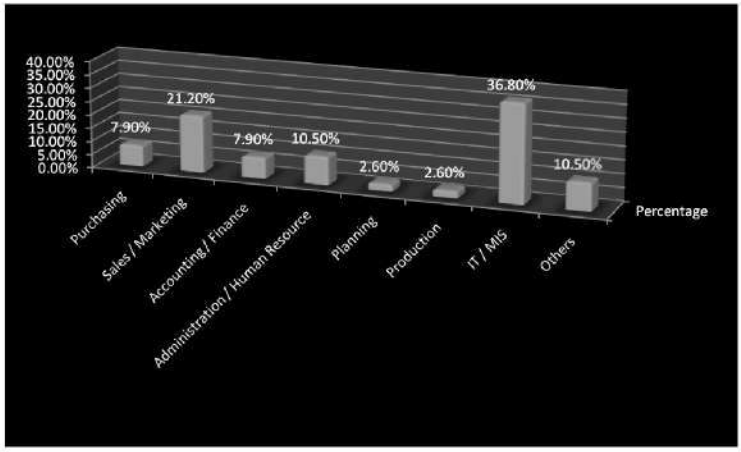

Figure 2: Job Function Distributions

besides Complexity, Security and Confidentiality and E-commerce Adoption show internal consistency if some of the research items are removed.

As mentioned earlier Relative Advantage and Observability are the two constructs that have no internal consistency. This is possibly due to the small sample size or the inappropriate items used to measure both Relative Advantage and Observability constructs. Further works have to be taken to research the appropriate items in measuring both constructs.

The Cronbach's Alpha value for Compatibility is .662. This construct measures how well SME perceive the new innovation will fit into their existing business process. The value will increase to .741 if the item #13, "Compatible with the culture of people in Malaysia" is removed.

The Cronbach's Alpha value for Trialability is .680. This construct measures the ability to engage in E-commerce. The value will increase to .810 if the item #23, "The start-up cost for using E-commerce is low" is removed.

Table 3: Cronbach's Alpha Reliability Analysis

Constructs	Cronbach's Alpha
Relative Advantage	0.585
Compatibility	0.662
Complexity	0.802
Trialability	0.68
Observability	0.606
Security and Confidentiality	0.729
E-commerce Adoption	0.912

The Cronbach's Alpha value for Complexity is .802. This construct measures the difficulty perceived by SME in adopting E-commerce. Likewise, this value will increase to .810 if the item #16, "E-commerce applications are too complicated to understand and use" is removed.

The Cronbach's Alpha value for Security and Confidentiality is .729. This construct measures SME confidence on the safety and confidentiality of information transferred during E-commerce activities.

The Cronbach's Alpha value for E-commerce Adoption is .912. This construct is about all internet activities that have been practiced by the company within five years of operation. The activities include using email as communication means with business partners; using website to access information; developing company's website; having online transaction; linking online business transactions with company's operating system; and creating business value chain activities with business partners over the Internet.

Initiatives

This study streamlines some of the initiatives by various sectors such as Ministry of International Trade and Industry (MITI), Small and Medium Industries Development Corporation (SMIDEC), Bank Negara Malaysia and local governments in accelerating the growth of E-commerce.

MITI has provided a few financial schemes to support the entrepreneurs company's activities in enhancing the technology, especially for SME towards E-commerce, such as Technology Acquisition Fund(TAF), Grant for Business Planning and Development (ITAF 1), Grant for Product and Process Improvement (ITAF 2), Grant for Market Development (ITAF 4) and Grant for ICT Application (expanded E-commerce Grant Scheme). The Grant for ICT Application provides grants for SME to participate in E-commerce and e-manufacturing activities. In E-commerce, it assists the SME in setting up the website cost to enable E-commerce activities through online transactions for B2B, B2C transaction and payment gateways. The funding comprises 70% grant with remainder of the cost to be borne by the applicant and the maximum grant per company is RM10, 000.

SMIDEC helps SME in promoting and coordinating the development of SME in Malaysia through a few ways. It provides technical and advisory support services in collaboration with other related agencies involved in SME development through SME Development Programmes such as Industrial Linkage Programme (ILP), Global Supplier Programme (GSP), SME Expert Advisory Panel (SEAP), Skills Upgrading Programme and Enterprise 50 Award Programme. The Skills Upgrading Programme aims to enhance the skills and capabilities of employees of SME in the technical and managerial levels, particularly in critical areas such as the electrical and electronics, information technology, industrial

design and engineering fields. At present, SMIDEC has appointed 39 training providers to undertake technical skill training for SME.

Bank Negara as the central bank for Malaysia has provided a few grants for SME, which are Matching Grant for Business Start-ups to assist start-up businesses for new entrepreneurs who are interested in business; and Matching Grant for Product and Process Improvement for improvement and upgrading of existing products, product design and process upgrading.

The local governments play a major role and are said to be the big contributor towards E-commerce adoption by SME. Most of the local governments are actively supporting the SME growth in Malaysia. For example Selangor has set up its own IT Centre called Jejak-IT. It is a learning pathway to IT skills development and certifications offered by Selangor Public Library Corporation (PPAS) in association with Jejak-IT dot com, to prepare students, employees and all citizens for Information and Communication Technology (ICT) skills where SME can take this opportunity to benefit the advantage offered.

Pahang, Penang, Malacca and Johor establish their own skills development centre known as Pahang Skills Development Centre (PSDC), Penang Skills Development Centre (PSDC), Malacca Industrial Skill Development Centre (MISDC) and Johor Skill Development Centre (PUSPATRI) respectively; that provide various training programmes in areas of technical and ICT as well as soft skills to meet the industrial and corporate training requirement.

The Malaysian Chinese Association (MCA) is a political party association that is actively organizing programs, workshops, dialogues and seminars to provide up-to-date information on loan schemes and policies related to SME. MCA ICT Resource Center (MIRC) is set up by the MCA ICT Bureau to assist Malaysian SME leverage the use of ICT solutions and advanced business processes that will enable them to remain competitive in an era of globalization. MIRC has organized many SME programmes. In 2007, it has organized the P5 pilot Project in Penang. MIRC e-SMEs Week 2008 is another program organized by MIRC filled with e-contents such as MIRC e-Enablement Workshops, IT Training Program and MIRC e-SMEs Program 2008. The MIRC e-Enablement Workshops provides knowledge enriching talks to SME to enhance their skills in developing online businesses and utilize the online platform to market their products or services. The Training Program is provided to create a platform for SME participants to strengthen their IT knowledge and skills in utilizing business solutions. The MIRC e-SME Program 2008 includes activities such as low cost hardware and software showcase, e-Business talks, IT advisory services (e-Enablement Helpdesk), and desktop PC or laptop health check clinic.

Conclusions and Future Works

This study reveals that the Malaysian Government has put in place a number of initiatives for the SME to adopt E-commerce. Such initiatives require the SME to take a proactive step in embracing ecommerce and to benefit from it. In the Ninth Malaysia Plan, a lot of emphasizes has been allocated on SME welfare. Some of them have been implemented through MITI, SMIDEC and Bank Negara Malaysia and the local governments.

A suggested future work would be to examine the direction of the SME after various opportunities and initiatives are made available for them. To what extent do these SME take the initiatives and how do they benefit from the programs and incentives provided to them? What are the driving forces for SME to seek assistance from these agencies such as MITI, SMIDEC, Bank Negara Malaysia and the local governments?

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